

ROLE OF TRANSPORT INFRASTRUCTURE IN THE ETHIOPIAN ECONOMY

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Abstract. The reduction of poverty, assurance of food security, and sustainable development of a country are all closely tied to infrastructural development. Developing nations face significant economic growth challenges due to inadequate transport infrastructures. Although the importance of transport infrastructures has been studied, the impact of the distribution of federal roads in Ethiopia has not been specifically investigated. This research aims to investigate the significance of the transport sector in Ethiopia's economic growth and identify the primary challenges facing the sector. Data from various secondary sources, such as the World Bank and Ethiopian Roads Authority, official reports, and published research works were used to conduct this research. Descriptive statistical analysis was employed to describe the secondary data, while charts, tables, and graphs were utilized to visualize the data findings. Ethiopia has faced numerous challenges in establishing and maintaining essential infrastructure, but the research suggests that the economic growth of the country is largely attributed to the development of its transport infrastructure. Despite ongoing obstacles, progress in the transport sector has been evident on an annual basis. The substandard quality of the road transport infrastructure has been a major impediment to the overall development of the country. Considering Ethiopia's significant resource endowment, it is imperative that the continued development of the transport infrastructure remains a top priority.

Keywords: road, air, infrastructure, economic growth, regional integration.

Introduction

Transport infrastructure plays a fundamental role in shaping the country's economy. Trade and economic growth are supported by efficient transport networks, which facilitate the movement of goods and people. By connecting various regions, transport infrastructure enhances accessibility, reduces transportation costs, fosters economic integration, and contributes to regional development. Moreover, it plays a critical role in enabling businesses to access resources and markets, thus driving economic growth. Overall, transport infrastructure not only eases the movement of goods and individuals but also serves as a fundamental enabler of economic activity and development. However, the cost of logistics linked to road transportation in East Africa exceeds that of any other region globally, making it a significant challenge for businesses operating in the area. Despite this, the road corridors in East Africa are relatively well-maintained compared to those in other African sub-regions, providing some level of relief for transportation and trade activities.

Analysis of the current situation

The term 'infrastructure' is commonly used in modern economic development, despite primarily being a technical term. It signifies the prerequisite, basis, or antecedent of the creation or development of something and has been in use since the beginning of human history. Experts agree that infrastructure is essential for economic activities, services, life, and development of settlements and regions. It plays a crucial role in the development of living conditions, employment structure, and lifestyle of the population, contributing to economic and social development. Outdated or underdeveloped infrastructure can hamper economic growth, create social problems, and lead to tension, making infrastructure a key element of poverty alleviation. Therefore, infrastructure development should always be on the agenda, regardless of the country size or development level.

Several studies on the subject indicate a favorable correlation between infrastructure expansion and economic progress, with strongly favourable coefficients, [1-6] reported that infrastructure bears a powerful positive association with economic and social growth particularly in our field of research.

Transport infrastructure impacts costs and service quality in international trade, which determines competitiveness in export/import markets. Domestic transaction costs and access to market information also depend on the transport infrastructure. It also contributes to the diversification of the economy in rural areas, facilitating the growth of alternative employment and consumption possibilities. In general, transport infrastructure is crucial for the economy to adjust the structure of demand and production in response to changing price signals.

An efficient infrastructural system is required for the successful implementation of these programs. The road transport sector is particularly crucial in creating a network of infrastructural facilities [7] indicated, based on several studies, that public spending on rural infrastructure is one of the most powerful instruments that governments can use to promote economic growth and poverty reduction, and road transport is considered the most crucial service among these.

Goals and discussion

The focus of road transportation infrastructure is on the construction and maintenance of road transportation systems. In Africa, there have been numerous advancements in both the construction of roads and the improvement of institutions that manage and maintain them. Despite improvement efforts, enhancing road accessibility remains a significant challenge in countries like Ethiopia, where road coverage and quality continue to be a major issue. Developing countries assume that a well-developed road transport sector can fuel the growth process through various development activities, such as creating market access opportunities for agricultural products. This is particularly relevant for countries like Ethiopia, where 79% of the population live in rural areas and are engaged in both domestic and international market production. Road transport facilities play a significant role in household production and consumption decisions, facilitating trade, education, health service provision, and better public and private service provisions, including banking and insurance services to rural dwellers. Additionally, roads play a crucial role in providing linkages to other modes of transportation such as railways, shipping, and airways. Improving transport infrastructure can also increase exports by up to 10%, according to some studies. Improving transport access can enhance the livelihood of rural Ethiopian communities, as recommended by [8]. Sustainable infrastructure access is a basic right of every inhabitant, according to [9]. The availability of good quality transportation access and other infrastructures can attract tourists to a country, which can be a source of foreign currency earnings. [10] concluded, in their investigation of the impact of public sector investment in transport on economic growth in Nigeria, that transportation plays a pivotal role in achieving sustainable economic growth. Since the downfall of the Dergue regime, the Ethiopian government has invested significant funds in various infrastructure projects, including those related to mining and energy, road transportation, information and communication, as well as health and education. The government of Ethiopia has prioritized transport infrastructure development over other infrastructure development, as the country has been landlocked since Eritrea's secession 29 years ago, initiating the Road Sector Development Project and implementing it over 14 years between 1997 and 2010 [11]. The primary purpose of this research is to analyze the status of transport infrastructures in Ethiopia. Additionally, this research will discuss the role of these infrastructures in the economy of the country and the challenges observed, along with possible solutions.

Methodology

To accomplish the research objectives, a thorough investigation of both quantitative and qualitative data was carried out. Descriptive statistics were employed using graphs and tables. The data were procured from credible sources such as the World Bank, Ethiopian Roads Authority, Trading Economics, National Bank of Ethiopia, published research papers, and reports. This comprehensive analysis is expected to provide insightful viewpoints on the subject of the research.

Results

Transport infrastructure

Despite having a favorable environment for investment opportunities, the Benshangul and Gambella regions lag in road network distribution. The chart indicates that the paved road coverage is slightly higher in all regions except for the Afar regional state, which is the major pastoral area. The paved road size depicted in the graph for the Afar region is limited to the main roads connecting the region to other areas, implying that the paved ways shown are probably similar to other regions in Ethiopia and indicating poor road infrastructure quality.

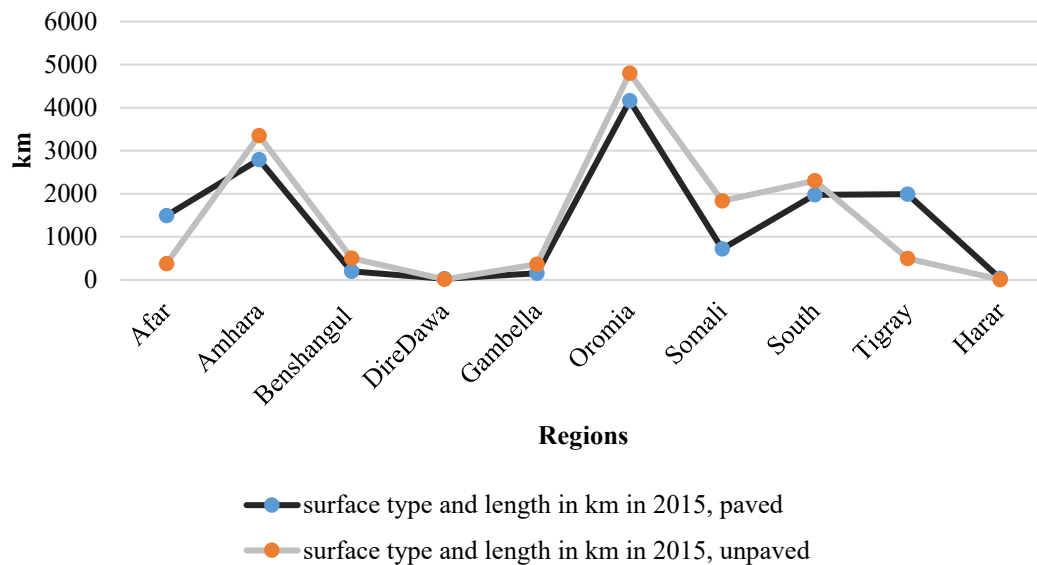


Fig. 1. Distribution of federal road networks in Ethiopian regions, 2015
(Source: Ethiopian Roads Authority, 2015)

On the other hand, the majority of the Ethiopian road network is unpaved which is unsuitable for both cars and travelers. As it can be seen from the table below, the trunk road network takes the highest share of road networks.

Table 1

Road network types and their nature in km

Road networks	Paved	Unpaved	Total Roads
Trunk	1343	-	1343
Link	335	374	709
Main access	237	611	848
Collector	-	385	385
Feeder	396	-	396

Source: Ethiopian Roads Authority, accessed 13/05/2023

Enhancing transport access is crucial to improving the livelihood of the rural community, which comprises the majority of Ethiopia's population. Better access to road transport facilities will allow rural farmers to engage more easily in the market. Financial constraints are a bottleneck in the process of increasing access to transport and improving its maintenance. Beyond financial consideration the "green" aspects - to diminish the environmental load - also have to be taken into account in the future investments as well [12]. Consequently, prioritizing the construction of rural roads based on their return to national income is essential, given the enormous investment required to construct road access.

Air transport

Air transportation is another important mode of transport that plays a crucial role in boosting the economy. It is considered to be one of the most technologically advanced and important modes of transportation, which includes the construction and maintenance of airports and all the systems linked to them. This sector has a significant contribution to the economic growth of the country.

Many studies have reported that air transportation has a high impact on boosting economic growth [13-15]. In today's competitive business environment, air transport is gaining importance since business activities are time sensitive. It has a better advantage over other modes of transportation for the transportation of imported or exported intermediate goods and services. Cargo transportation is also an important aspect of air transport as it plays a vital role in transporting goods. A study conducted by [16] indicated that the increase in cargo development by one percent is likely to increase the total trade by 6.3%.

The Ethiopian airline plays a vital role in transporting both people and goods through its cargo services. The table below displays the amount of freight carried in millions of tons and the number of passengers transported by the Ethiopian airline from 2010 to 2017. There has been a significant increase in the freight carried by the airline from 407.062 million tons in 2010 to 2089.278 million tons in 2018. This substantial growth shows that the airline contribution is improving dramatically. Additionally, the total number of passengers transported has increased from 3,347,022 to about 8,154,244 (about 243%), indicating that passengers prefer the airline. The number of international departures per year has also increased by 127% to 110,971 departures in 2018 compared to 48,783 departures in 2010. But there is a significant decrement in the three indicators in 2019 and 2020 due to COVID-19 and other factors.

Table 2

Freight carried (in millions of ton- km), number of passengers carried and registered career departures by Ethiopian airline, 2010-2018

Year	Freight carried (in millions of ton-km)	Number of passengers carried	Registered career departures
2010	407.062	3,347,022	48,783
2011	505.565	4,440,917	57,728
2012	703.644	5,001,121	62,136
2013	790.743	5,671,501	68,131
2014	950.157	6,274,582	71,166
2015	1228.738	7,074,779	83,940
2016	1500.148	8,242,114	94,330
2017	2076.185	9,566,378	99,263
2018	2089.278	11,501,244	110,971
2019	2,450	12,631,216	119,542
2020	2,897	4,940,183	72,194
2021	3,717	7,065,954	99,415

Source: World Bank

Conclusions

Infrastructure is a critical component in supporting the economic activities of a country. The development of infrastructure, specifically transportation is essential for a country to become developed. Ethiopia is a nation with abundant tourism, livestock, and agricultural commodities such as coffee and oilseeds that are exported. Road transportation is a vital infrastructure that provides market access to rural farmers and enables tourists to travel at lower costs. Ethiopia's road transportation quality is one of the poorest in the region, with most roads still unpaved or unconnected. The lack of infrastructure is a significant challenge in emerging regions such as Gambella and Benshangule, where the number of paved roads is limited. The road transport system is also a significant challenge that needs to be addressed. However, significant developments have occurred in Ethiopia and other African countries. The interconnection between neighboring African nations is a significant bottleneck. The cooperation between these countries could lead to increased trade and more cross-border and cross-continent railway and motorway connections in the future.

Ethiopian Airlines has played a significant role in the country's economy by contributing a significant portion of services to GDP. However, the cost of domestic flights is prohibitively high for many Ethiopians. The government should focus on the transport infrastructure to improve accessibility and the quality of roads properly maintained.

Author contribution

Conceptualization, Abdulkadr A.; methodology, Abdulkadr, A. and Neszmélyi, G. I.; formal analysis, Abdulkadr, A., Neszmélyi, G. I. and Nagy, H.; investigation, Abdulkadr, A., Neszmélyi, G. I. and Nagy, H.; writing original draft preparation, Abdulkadr A.; writing review and editing, Neszmélyi, G. I. and Nagy, H.; visualization, Neszmélyi, G. I. and Nagy, H.

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